PROJECT TITLE: **Movements, distribution and habitat selection of elk in the Missouri River Breaks and portions of the Charles M. Russell National Wildlife Refuge.**

FY-2014

PROJECT DESCRIPTION

Inventory and Monitoring funding, combined with other support, was awarded for this project during FY-2012. Fifty GPS collars were deployed on cow elk during February, 2013 (FY-2013) and are scheduled to drop during February 2015 (FY-2015), when location data will be downloaded from these store-on-board collars and become available for analysis.

Spatially depict elk habitat use and intensity for a better understanding of elk ecology and especially to help develop a predictive model of expected habitat quality and sentinel plant status in accordance with the Comprehensive Conservation Plan for CMR.Charles M. Russell National Wildlife Refuge.

OBJECTIVES AND ALTERNATIVES

1. Elk distribution, movement and habitat selection during the hunting season and assessing the influence of public hunting access is the primary objective of the FWP study. Secondarily, FWP will validate the utility of late-summer and fall elk distribution models developed in southwestern Montana (Proffitt et al. in revision).
2. In addition to Objective 1, FWP's primary focus, this proposal seeks for USFWS/CMR to develop seasonal habitat selection models and resource selection functions (Manly et al., 2002) for elk habitat use during the non-hunting periods from February, 2013 through December 2014.
3. Incorporate data resulting from this study of elk with objective no. 3 of the on-going CMR I&M project on grazing; Using the updated map layers and complete livestock grazing history, coupled with native ungulate population monitoring, we will spatially depict historic and current herbivory intensity and develop a predictive model of expected habitat quality and sentinel plant status.

METHODS AND PROTOCOLS

Fifty cow elk were collared via helicopter net-gunning during February 2013 on and adjacent to the western portion of CMR, north of the Missouri River in Hunting Districts 621, 622 and 631 to obtain 2 years of fine-scale spatial data on seasonal distributions, movements and habitat use. Locations will be recorded every 2 hours and should yield nearly 8,000 locations per individual and total nearly 400,000 for the population. Collars are scheduled to drop in February 2015 and data will become available to begin analyses by spring, 2015.

DATA ANALYSIS / MODELS

Utilization distributions (UDs) describe an animal's use of space via a probability density and can be constructed from individual locations gathered over time (van Winkle 1975, Worton 1989). UDs can be used to quantify and relate an animal's relative space use to resource attributes by providing a continuous measure of animal density throughout the study area where the probability and intensity of use can be derived at any given location (Marzluff et al. 2004, Millspaugh et al. 2006). We will used Home Range Tools for ArcGIS (Rodgers et al. 2007) to generate pre-breeding fixed kernel density UDs and delineate 95% isopleths for home ranges (Demers et al. 2010).

DATA MANAGEMENT

FWS protocol will be followed regarding data management. Data collected during this study will be freely shared among agency collaborators. Data will be housed in databases and a GIS

located on CMR computers in Lewistown and with FWP.

PARTNERS

Many people from Montana Fish, Wildlife and Parks, Charles M. Russell NWR and Bureau of Land Management staff along with contract capture people have been involved with the project.

SOURCES OF SUPPORT

FWS I&M (FY-2012) = $50,000
CMR = $20,000
FWP = $89,000
BLM = $30,000
Total = $189,000

Montana Fish, Wildlife and Parks has provided support for periodic aerial monitoring of elk for survival status since collar deployment in February, 2013.

CURRENT STATUS

Collar deployment was accomplished in February, 2013. FWP staff has been monitoring collared elk status periodically since then. Plans are currently being made to retrieve collars as they are programmed to drop off the elk in February, 2015.

CHALLENGES

Securing additional funding to support a graduate student or a contractor to assist with data analyses after the collars are retrieved and data are downloaded during spring, 2015.

MORE INFORMATION

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LITERATURE CITATION

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